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<110> Alexion Pharmaceuticals, Inc.
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Faas-Knight, Susan
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Carr, Francis J.
Hamilton, Anita

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<140> PCT/US2004/017219
<141> 2004-05-28

<150> US 60/475,155
<151> 2003-06-02

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aatagtgtat gcggcgaccg agttgctctt gcccggcgtc aatacgggat aataccgcgc 5700

cacatagcag aactttaaaa gtgctcatca ttggaaaacg ttcttcgggg cgaaaactct 5760

caaggatctt accgctgttg agatccagtt cgatgtaacc cactcgtgca cccaactgat 5820

cttcagcatc ttttactttc accagcgttt ctgggtgagc aaaaacagga aggcaaaatg 5880

ccgcaaaaaa gggaataagg gcgacacgga aatgttgaat actcatactc ttcctttttc 5940

aatattattg aagcatttat cagggttatt gtctcatgag cggatacata tttgaatgta 6000

tttagaaaaa taaacaaata ggggttccgc gcacatttcc ccgaaaagtg ccacctg 6057

<210> 8
<211> 235
<212> PRT
<213> human

<400> 8

Met Lys Trp Ser Trp Val Ile Leu Phe Leu Leu Ser Val Thr Ala Gly
1 5 10 15

Val His Ser Gln Val Gln Val Gln Gln Ser Gly Ala Glu Leu Ala Arg
20 25 30

Pro Trp Ala Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Asn Phe
35 40 45

Asn Ser Tyr Trp Met Gln Trp Val Lys Gln Arg Pro Gly Gln Gly Leu
50 55 60

Glu Trp Ile Gly Ala Ile Tyr Pro Gly Asp Gly Asp Thr Ser Tyr Thr
65 70 75 80

Gln Lys Phe Arg Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser
85 90 95

Thr Ala Tyr Met Gln Leu Ser Ser Leu Ala Ser Glu Asp Ser Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Arg Thr Val Gly Gly Tyr Phe Asp Tyr Trp Gly
115 120 125

Gln Gly Thr Thr Leu Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser
130 135 140

Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala
145 150 155 160

Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val
165 170 175

Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala
180 185 190

Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val
195 200 205

Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His
210 215 220

Lys Pro Ser Asn Thr Lys Val Asp Lys Thr Val
225 230 235

<210> 9
<211> 2026
<212> DNA
<213> human

<400> 9
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ggcccagctc tgtcccacac cgcggtcaca tggcaccacc tctcttgcag cctccaccaa 240

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cctgggctgc ctggtcaagg actacttccc cgaaccggtg acggtgtcgt ggaactcagg 360

cgccctgacc agcggcgtgc acaccttccc ggctgtccta cagtcctcag gactctactc 420

cctcagcagc gtggtgaccg tgccctccag caacttcggc acccagacct acacctgcaa 480

cgtagatcac aagcccagca acaccaaggt ggacaagaca gttggtgaga ggccagctca 540

gggagggagg gtgtctgctg gaagccaggc tcagccctcc tgcctggacg caccccggct 600

gtgcagcccc agcccagggc agcaaggcag gccccatctg tctcctcacc cggaggcctc 660

tgcccgcccc actcatgctc agggagaggg tcttctggct ttttccacca ggctccaggg 720

aggcacaggc tgggtgcccc taccccaggc ccttcacaca caggggcagg tgcttggctc 780

agacctgcca aaagccatat ccgggaggac cctgcccctg acctaagccg accccaaagg 840

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caactggtac gtggatggcg tggaggtgca taatgccaag acaaagccgc gggaggagca 1260

gttcaacagc acgtaccgtg tggtcagcgt cctcaccgtc ctgcaccagg actggctgaa 1320

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catctccaaa gccaaaggtg ggacccacgg ggtgcgaggg ccacatggac agaggtcagc 1440

tcggcccacc ctctgccctg ggagtgaccg ctgtgccaac ctctgtccct acagggcagc 1500

cccgagagcc acaggtgtac accctgcccc catcccagga ggagatgacc aagaaccagg 1560

tcagcctgac ctgcctggtc aaaggcttct accccagcga catcgccgtg gagtgggaga 1620

gcaatgggca gccggagaac aactacaaga ccacgcctcc cgtgctggac tccgacggct 1680

ccttcttcct ctacagcagg ctaaccgtgg acaagagcag gtggcaggag gggaatgtct 1740

tctcatgctc cgtgatgcat gaggctctgc acaaccacta cacacagaag agcctctccc 1800

tgtctctggg taaatgagtg ccagggccgg caagcccccg ctccccgggc tctcggggtc 1860

gcgcgaggat gcttggcacg taccccgtct acatacttcc caggcaccca gcatggaaat 1920

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gccgagtctg aggcctgagt gacatgagga attcagatct ggatcc 2026

<210> 10
<211> 119
<212> PRT
<213> murine

<400> 10

Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Ala Arg Pro Gly Ala
1 5 10 15

Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Arg Tyr
20 25 30

Thr Met His Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Tyr Ile Asn Pro Ser Arg Gly Tyr Thr Asn Tyr Asn Gln Lys Phe
50 55 60

Lys Asp Lys Ala Thr Leu Thr Thr Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Tyr Tyr Asp Asp His Tyr Cys Leu Asp Tyr Trp Gly Gln Gly
100 105 110

Thr Thr Leu Thr Val Ser Ser
115

<210> 11
<211> 119
<212> PRT
<213> artificial sequence

<220>
<223> de-immunized heavy chain variable region

<400> 11

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Ala Thr Arg Tyr
20 25 30

Thr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Tyr Ile Asn Pro Ser Arg Gly Tyr Thr Asn Tyr Ala Gln Lys Phe
50 55 60

Gln Asp Arg Val Thr Ile Thr Thr Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Tyr Tyr Asp Asp His Tyr Cys Leu Asp Tyr Trp Gly Gln Gly
100 105 110

Thr Thr Val Thr Val Ser Ser
115

<210> 12
<211> 119
<212> PRT
<213> artificial sequence

<220>
<223> de-immunized heavy chain variable region

<400> 12

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Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1               5                   10                  15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Ala Thr Arg Tyr
            20                  25                  30

Thr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Tyr Ile Asn Pro Ser Arg Gly Tyr Thr Asn Tyr Ala Asp Ser Val
    50                  55                  60

Lys Gly Arg Phe Thr Ile Thr Thr Asp Lys Ser Ser Ser Thr Ala Tyr
65                  70                  75                  80

Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Tyr Tyr Asp Asp His Tyr Cys Leu Asp Tyr Trp Gly Gln Gly
            100                 105                 110

Thr Thr Val Thr Val Ser Ser
        115
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<210> 13
<211> 119
<212> PRT
<213> artificial sequence

<220>
<223> de-immunized heavy chain variable region

<400> 13

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Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1               5                   10                  15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Ala Thr Arg Tyr
            20                  25                  30

Thr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Tyr Ile Asn Pro Ser Arg Gly Tyr Thr Asn Tyr Asn Gln Lys Phe
    50                  55                  60

Lys Asp Arg Val Thr Ile Thr Thr Asp Lys Ser Ser Ser Thr Ala Tyr
65                  70                  75                  80
```

```
Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Tyr Tyr Asp Asp His Tyr Cys Leu Asp Tyr Trp Gly Gln Gly
            100                 105                 110

Thr Thr Val Thr Val Ser Ser
        115
```

<210> 14
<211> 119
<212> PRT
<213> artificial sequence

<220>
<223> de-immunized heavy chain variable region

<400> 14

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Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1               5                   10                  15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Ala Thr Arg Tyr
            20                  25                  30

Thr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Tyr Ile Asn Pro Ser Arg Gly Tyr Thr Asn Tyr Asn Gln Lys Val
    50                  55                  60

Lys Asp Arg Phe Thr Ile Thr Thr Asp Lys Ser Ser Ser Thr Ala Tyr
65                  70                  75                  80

Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Tyr Tyr Asp Asp His Tyr Cys Leu Asp Tyr Trp Gly Gln Gly
            100                 105                 110

Thr Thr Val Thr Val Ser Ser
        115
```

<210> 15
<211> 119
<212> PRT
<213> artificial sequence

<220>
<223> de-immunized heavy chain variable region

<400> 15

```
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1               5                   10                  15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Arg Tyr
            20                  25                  30

Thr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Tyr Ile Asn Pro Ser Arg Gly Tyr Thr Asn Tyr Asn Gln Lys Phe
    50                  55                  60

Lys Asp Arg Val Thr Ile Thr Thr Asp Lys Ser Ser Ser Thr Ala Tyr
65                  70                  75                  80

Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Tyr Tyr Asp Asp His Tyr Cys Leu Asp Tyr Trp Gly Gln Gly
            100                 105                 110

Thr Thr Val Thr Val Ser Ser
        115
```

<210> 16
<211> 119
<212> PRT
<213> artificial sequence

<220>
<223> de-immunized heavy chain variable region

<400> 16

```
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1               5                   10                  15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Arg Tyr
            20                  25                  30

Thr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45
```

Gly Tyr Ile Asn Pro Ser Arg Gly Tyr Thr Asn Tyr Ala Gln Lys Phe
50 55 60

Gln Asp Arg Val Thr Ile Thr Thr Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Tyr Tyr Asp Asp His Tyr Cys Leu Asp Tyr Trp Gly Gln Gly
100 105 110

Thr Thr Val Thr Val Ser Ser
115

<210> 17
<211> 119
<212> PRT
<213> artificial sequence

<220>
<223> de-immunized heavy chain variable region

<400> 17

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Arg Tyr
20 25 30

Thr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Tyr Ile Asn Pro Ser Arg Gly Tyr Thr Asn Tyr Asn Gln Lys Val
50 55 60

Lys Asp Arg Phe Thr Ile Thr Thr Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Tyr Tyr Asp Asp His Tyr Cys Leu Asp Tyr Trp Gly Gln Gly
100 105 110

Thr Thr Val Thr Val Ser Ser
115

<210> 18
<211> 106
<212> PRT
<213> murine

<400> 18

Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
1 5 10 15

Glu Lys Val Thr Met Thr Cys Ser Ala Ser Ser Ser Val Ser Tyr Met
20 25 30

Asn Trp Tyr Gln Gln Lys Ser Gly Thr Ser Pro Lys Arg Trp Ile Tyr
35 40 45

Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Ala His Phe Arg Gly Ser
50 55 60

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Gly Met Glu Ala Glu
65 70 75 80

Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp Ser Ser Asn Pro Phe Thr
85 90 95

Phe Gly Ser Gly Thr Lys Leu Glu Ile Asn
100 105

<210> 19
<211> 106
<212> PRT
<213> artificial sequence

<220>
<223> de-immunized light chain variable region

<400> 19

Gln Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser Leu Ser Pro Gly
1 5 10 15

Glu Arg Ala Thr Leu Thr Cys Ser Ala Ser Ser Ser Ala Ser Tyr Met
20 25 30

Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Arg Trp Ile Tyr
35 40 45

Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Ser Arg Phe Ser Gly Ser
50 55 60

Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Asn Ser Leu Glu Ala Glu
65 70 75 80

Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp Ser Ser Asn Pro Phe Thr
85 90 95

Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105

<210> 20
<211> 106
<212> PRT
<213> artificial sequence

<220>
<223> de-immunized light chain variable region

<400> 20

Gln Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser Leu Ser Pro Gly
1 5 10 15

Glu Arg Ala Thr Leu Thr Cys Ser Ala Ser Ser Ser Val Ser Tyr Met
20 25 30

Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Arg Trp Ile Tyr
35 40 45

Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Ser Arg Phe Ser Gly Ser
50 55 60

Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Asn Ser Leu Glu Ala Glu
65 70 75 80

Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp Ser Ser Asn Pro Phe Thr
85 90 95

Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105

<210> 21
<211> 819
<212> DNA
<213> artificial sequence

<220>
<223> de-immunized VH expression cassette

<400> 21
aagcttatga atatgcaaat cctctgaatc tacatggtaa atataggttt gtctatacca 60

caaacagaaa aacatgagat cacagttgtc tctacagtta ctgagcacac aggacctcac 120

catgggatgg agctgtatca tcctcttctt ggtagcaaca gctacaggta aggggctcac 180

agtagcaggc ttgaggtctg gacatatata tgggtgacaa tgacatccac tttgcctttc 240

tctccacagg tgtccactcc caggtccagc tggtacagtc tggggctgaa gtcaagaaac 300

ctggggcctc agtgaaggtg tcctgcaagg cttctggcta cacggctact aggtacacga 360

tgcactgggt aagacaggcg cctggacaag gtttggaatg gattggatac attaacccta 420

gccatggata tactaattac gctcagaagt tccaggacag ggtcacaatc actacagaca 480

aatcttccag cacagcctac ttgcaaatga acagcctgaa aactgaggac accgcagtct 540

attactgtgc aagatattat gatgatcatt actgtctcga ctactggggc caaggcacca 600

ctgtgacagt ctcctcaggt gagtccttac aacctctctc ttctattcag cttaaataga 660

ttttactgca tttgttgggg gggaaatgtg tgtatctgaa tttcaggtca tgaaggacta 720

gggacacctt gggagtcaga aagggtcatt gggagcccgg gctgatgcag acagacatcc 780

tcagctccca gacttcatgg ccagagattt ataggatcc 819

<210> 22
<211> 15
<212> PRT
<213> artificial sequence

<220>
<223> signal protein

<400> 22

Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr
1 5 10 15

<210> 23
<211> 617
<212> DNA
<213> artificial sequence

<220>
<223> de-immunized VK expression cassette

<400> 23
aagcttatga atatgcaaat cctctgaatc tacatggtaa atataggttt gtctatacca 60

caaacagaaa aacatgagat cacagttctc tctacagtta ctgagcacac aggacctcac 120

catgggatgg agctgtatca tcctcttctt ggtagcaaca gctacaggta aggggctcac 180

agtagcaggc ttgaggtctg gacatatata tgggtgacaa tgacatccac tttgcctttc 240

tctccacagg tgtccactcc caaattgttc tcacccagtc tccagcaacc ctctctcttt 300

ctccagggga acgcgccacc ttgacatgca gtgccagctc aagtgcaagt tacatgaact 360

ggtaccagca gaagcccggc aaagctccca aaagatggat ttatgacaca tcaaaactgg 420

cttctggagt accgtctcgc ttcagtggca gtgggtctgg gaccgattac tctctcacaa 480

tcaatagtct ggaagctgaa gatgccgcaa cttattactg ccagcagtgg tcaagtaacc 540

cattcacgtt cggacaaggt acaaaggtgg aaatcaaacg tgagtagaat ttaaactttg 600

cttcctcagt tggatcc 617

<210> 24
<211> 15
<212> PRT
<213> artificial sequence

<220>
<223> signal protein

<400> 24

Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr
1 5 10 15

<210> 25
<211> 467
<212> PRT
<213> murine

<400> 25

Met Glu Arg His Trp Ile Phe Leu Leu Leu Leu Ser Val Thr Ala Gly
1 5 10 15

Val His Ser Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Ala Arg
20 25 30

Pro Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Tyr Thr Phe Thr
35 40 45

Arg Tyr Thr Met His Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu
50 55 60

Trp Ile Gly Tyr Ile Asn Pro Ser Arg Gly Tyr Thr Asn Tyr Asn Gln
65 70 75 80

```
Lys Phe Lys Asp Lys Ala Thr Leu Thr Thr Asp Lys Ser Ser Ser Thr
                85                  90                  95

Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr
            100                 105                 110

Tyr Cys Ala Arg Tyr Tyr Asp Asp His Tyr Cys Leu Asp Tyr Trp Gly
        115                 120                 125

Gln Gly Thr Thr Leu Thr Val Ser Ser Ala Lys Thr Thr Ala Pro Ser
    130                 135                 140

Val Tyr Pro Leu Ala Pro Val Cys Gly Asp Thr Thr Gly Ser Ser Val
145                 150                 155                 160

Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu Pro Val Thr Leu
                165                 170                 175

Thr Trp Asn Ser Gly Ser Leu Ser Ser Gly Val His Thr Phe Pro Ala
            180                 185                 190

Val Leu Gln Ser Asp Leu Tyr Thr Leu Ser Ser Ser Val Thr Val Thr
        195                 200                 205

Ser Ser Thr Trp Pro Ser Gln Ser Ile Thr Cys Asn Val Ala His Pro
    210                 215                 220

Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Glu Pro Arg Gly Pro Thr
225                 230                 235                 240

Ile Lys Pro Cys Pro Pro Cys Lys Cys Pro Ala Pro Asn Leu Leu Gly
                245                 250                 255

Gly Pro Ser Val Phe Ile Phe Pro Pro Lys Ile Lys Asp Val Leu Met
            260                 265                 270

Ile Ser Leu Ser Pro Ile Val Thr Cys Val Val Val Asp Val Ser Glu
        275                 280                 285

Asp Asp Pro Asp Val Gln Ile Ser Trp Phe Val Asn Asn Val Glu Val
    290                 295                 300

His Thr Ala Gln Thr Gln Thr His Arg Glu Asp Tyr Asn Ser Thr Leu
305                 310                 315                 320
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Arg Val Val Ser Ala Leu Pro Ile Gln His Gln Asp Trp Met Ser Gly
                325                 330                 335

Lys Glu Phe Lys Cys Lys Val Asn Asn Lys Asp Leu Pro Ala Pro Ile
            340                 345                 350

Glu Arg Thr Ile Ser Lys Pro Lys Gly Ser Val Arg Ala Pro Gln Val
        355                 360                 365

Tyr Val Leu Pro Pro Pro Glu Glu Glu Met Thr Lys Lys Gln Val Thr
    370                 375                 380

Leu Thr Cys Met Val Thr Asp Phe Met Pro Glu Asp Ile Tyr Val Glu
385                 390                 395                 400

Trp Thr Asn Asn Gly Lys Thr Glu Leu Asn Tyr Lys Asn Thr Glu Pro
                405                 410                 415

Val Leu Asp Ser Asp Gly Ser Tyr Phe Met Tyr Ser Lys Leu Arg Val
            420                 425                 430

Glu Lys Lys Asn Trp Val Glu Arg Asn Ser Tyr Ser Cys Ser Val Val
        435                 440                 445

His Glu Gly Leu His Asn His His Thr Thr Lys Ser Phe Ser Arg Thr
    450                 455                 460

Pro Gly Lys
465
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<210> 26
<211> 1570
<212> DNA
<213> murine

<400> 26

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gaattcccct ctccacagac actgaaaact ctgactcaac atggaaaggc ctggatcttt     60

ctactcctgt tgtcagtaac tgcaggtgtc cactcccagg tccagctgca gcagtctggg    120

gctgaactgg caagacctgg ggcctcagtg aagatgtcct gcaaggcttc tggctacacc    180

tttactaggt acacgatgca ctgggtaaaa cagaggcctg gacagggtct ggaatggatt    240

ggatacatta atcctagccg tggttatact taattacaat cagaagttca aggacaaggc    300

cacattgact acagacaaat cctccagcac agcctacatg caactgagca gcctgacatc    360

tgaggactct gcagtctatt actgtgcaag atattatgat gatcattact gccttgacta    420
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ctggggccaa ggcaccactc tcacagtctc ctcagccaaa acaacagccc catcggtcta 480

tccactggcc cctgtgtgtg gagatacaac tggctcctcg gtgactctag gatgcctggt 540

caagggttat ttccctgagc cagtgacctt gacctggaac tctggatccc tgtccagtgg 600

tgtgcacacc ttcccagctg tcctgcagtc tgacctctac accctcagca gctcagtgac 660

tgtaacctcg agcacctggc ccagccagtc catcacctgc aatgtggccc acccggcaag 720

cagcaccaag gtggacaaga aaattgagcc cagagggccc acaatcaagc cctgtcctcc 780

atgcaaatgc ccagcaccta acctcttggg tggaccatcc gtcttcatct tccctccaaa 840

gatcaaggat gtactcatga tctccctgag ccccatagtc acatgtgtgg tggtggatgt 900

gagcgaggat gacccagatg tccagatcag ctggtttgtg aacaacgtgg aagtacacac 960

agctcagaca caaacccata gagaggatta caacagtact ctccgggtgg tcagtgccct 1020

ccccatccag caccaggact ggatgagtgg caaggagttc aaatgcaagg tcaacaacaa 1080

agacctccca gcgcccatcg agagaaccat ctcaaaaccc aaagggtcag taagagctcc 1140

acaggtatat gtcttgcctc caccagaaga agagatgact aagaaacagg tcactctgac 1200

ctgcatggtc acagacttca tgcctgaaga catttacgtg gagtggacca acaacgggaa 1260

aacagagcta aactacaaga acactgaacc agtcctggac tctgatggtt cttacttcat 1320

gtacagcaag ctgagagtgg aaaagaagaa ctgggtggaa agaaatagct actcctgttc 1380

agtggtccac gagggtctgc acaatcacca cacgactaag agcttctccc ggactccggg 1440

taaatgagct cagcacccac aaaactctca ggtccaaaga gacacccaca ctcatctcca 1500

tgcttccctt gtataaataa agcacccagc aatgcctggg accatgtaaa aaaaaaaaaa 1560

aaaggaattc 1570

<210> 27
<211> 235
<212> PRT
<213> murine

<400> 27

Met Asp Phe Gln Val Gln Ile Phe Ser Phe Leu Leu Ile Ser Ala Ser
1 5 10 15

Val Ile Ile Ser Arg Gly Gln Ile Val Leu Thr Gln Ser Pro Ala Ile
20 25 30

Met Ser Ala Ser Pro Gly Glu Lys Val Thr Met Thr Cys Ser Ala Ser
35 40 45

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Ser Ser Val Ser Tyr Met Asn Trp Tyr Gln Gln Lys Ser Gly Thr Ser
    50                  55                  60

Pro Lys Arg Trp Ile Tyr Asp Thr Ser Lys Leu Ala Ser Gly Val Pro
65                  70                  75                  80

Ala His Phe Arg Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile
                85                  90                  95

Ser Gly Met Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp
            100                 105                 110

Ser Ser Asn Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Asn
        115                 120                 125

Arg Ala Asp Thr Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu
    130                 135                 140

Gln Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe
145                 150                 155                 160

Tyr Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg
                165                 170                 175

Gln Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser
            180                 185                 190

Thr Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu
        195                 200                 205

Arg His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser
    210                 215                 220

Pro Ile Val Lys Ser Phe Asn Arg Asn Glu Cys
225                 230                 235
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<210> 28
<211> 943
<212> DNA
<213> murine

<400> 28

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gaattcccaa agacaaaatg gattttcaag tgcagatttt cagcttcctg ctaatcagtg     60

cctcagtcat aatatccaga ggacaaattg ttctcaccca gtctccagca atcatgtctg    120

catctccagg ggagaaggtc accatgacct gcagtgccag ctcaagtgta agttacatga    180
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actggtacca gcagaagtca ggcacctccc ccaaaagatg gatttatgac acatccaaac 240

tggcttctgg agtccctgct cacttcaggg gcagtgggtc tgggacctct tactctctca 300

caatcagcgg catggaggct gaagatgctg ccacttatta ctgccagcag tggagtagta 360

acccattcac gttcggctcg gggacaaagt tggaaataaa ccgggctgat actgcaccaa 420

ctgtatccat cttcccacca tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt 480

gcttcttgaa caacttctac cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg 540

aacgacaaaa tggcgtcctg aacagttgga ctgatcagga cagcaaagac agcacctaca 600

gcatgagcag caccctcacg ttgaccaagg acgagtatga acgacataac agctatacct 660

gtgaggccac tcacaagaca tcaacttcac ccattgtcaa gagcttcaac aggaatgagt 720

gttagagaca aaggtcctga gacgccacca ccagctccca gctccatcct atcttccctt 780

ctaaggtctt ggaggcttcc ccacaagcgc ttaccactgt tgcggtgctc taaacctcct 840

cccacctcct tctcctcctc ctccctttcc ttggctttta tcatgctaat atttgcagaa 900

aatattcaat aaagtgagtc tttgccttga aaaaaaaaaa aaa 943

<210> 29
<211> 123
<212> PRT
<213> murine

<400> 29

Gly Val His Ser Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Ala
1 5 10 15

Arg Pro Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr
20 25 30

Phe Thr Arg Tyr Thr Met His Trp Val Lys Gln Arg Pro Gly Gln Gly
35 40 45

Leu Glu Trp Ile Gly Tyr Ile Asn Pro Ser Arg Gly Tyr Thr Asn Tyr
50 55 60

Asn Gln Lys Phe Lys Asp Lys Ala Thr Leu Thr Thr Asp Lys Ser Ser
65 70 75 80

Ser Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala
85 90 95

Val Tyr Tyr Cys Ala Arg Tyr Tyr Asp Asp His Tyr Cys Leu Asp Tyr
100 105 110

Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser
115 120

<210> 30
<211> 110
<212> PRT
<213> murine

<400> 30

Gly Val His Ser Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser
1 5 10 15

Ala Ser Pro Gly Glu Lys Val Thr Met Thr Cys Ser Ala Ser Ser Ser
20 25 30

Val Ser Tyr Met Asn Trp Tyr Gln Gln Lys Ser Gly Thr Ser Pro Lys
35 40 45

Arg Trp Ile Tyr Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Ala His
50 55 60

Phe Arg Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Gly
65 70 75 80

Met Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp Ser Ser
85 90 95

Asn Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
100 105 110

<210> 31
<211> 12
<212> PRT
<213> human

<400> 31

Glu Ser Lys Tyr Gly Pro Pro Cys Pro Ser Cys Pro
1 5 10

<210> 32
<211> 110
<212> PRT
<213> human

<400> 32

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Ala Pro Glu Phe Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys
1               5                   10                  15

Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
            20                  25                  30

Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr
        35                  40                  45

Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
    50                  55                  60

Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
65                  70                  75                  80

Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
                85                  90                  95

Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys
            100                 105                 110
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<210> 33
<211> 107
<212> PRT
<213> human

<400> 33

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Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu
1               5                   10                  15

Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe
            20                  25                  30

Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu
        35                  40                  45

Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe
    50                  55                  60

Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly
65                  70                  75                  80

Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr
                85                  90                  95
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Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys
100 105

<210> 34
<211> 12
<212> PRT
<213> human

<400> 34

Glu Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro
1 5 10

<210> 35
<211> 109
<212> PRT
<213> human

<400> 35

Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro
1 5 10 15

Lys Asp Thr Leu Asn Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
20 25 30

Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val
35 40 45

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
50 55 60

Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
65 70 75 80

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly
85 90 95

Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys
100 105

<210> 36
<211> 107
<212> PRT
<213> human

<400> 36

Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu
1 5 10 15

Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe
20 25 30

Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu
35 40 45

Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe
50 55 60

Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly
65 70 75 80

Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr
85 90 95

Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys
100 105

<210> 37
<211> 43
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 37
gaagtcaaga aacctggggc ctcagtgaag gtgtcctgca agg 43

<210> 38
<211> 47
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 38
gccccaggtt tcttgacttc agccccagac tgtaccagct ggacctg 47

<210> 39
<211> 31
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 39
tgggtaagac aggcgcctgg acaaggtttg g 31

<210> 40
<211> 29
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 40
gtccaggcgc ctgtcttacc cagtgcatc 29

<210> 41
<211> 48
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 41
aggcgcctgt cttacccagt gcatcgtgta cctagtagcc gtgtagcc 48

<210> 42
<211> 43
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 42
caatcagaag ttcaaggaca gggtcacaat cactacagac aaa 43

<210> 43
<211> 43
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 43
cgctcagaag ttccaggaca gggtcacaat cactacagac aaa 43

<210> 44
<211> 43
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 44
cgctgacagt gtcaagggca ggttcacaat cactacagac aaa 43

<210> 45
<211> 43
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 45
caatcagaag gtcaaggaca ggttcacaat cactacagac aaa 43

<210> 46
<211> 37
<212> DNA
<213> artificial sequence

<220>
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<400> 46
gtccttgaac ttctgattgt aattagtata tccacgg 37

<210> 47
<211> 37
<212> DNA
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<220>
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<400> 47
gtcctggaac ttctgagcgt aattagtata tccacgg 37

<210> 48
<211> 37
<212> DNA
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<220>
<223> oligonucleotide

<400> 48
gcccttgaca ctgtcagcgt aattagtata tccacgg 37

<210> 49
<211> 37
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 49
gtccttgacc ttctgattgt aattagtata tccacgg 37

<210> 50
<211> 35
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 50
agcctgaaaa ctgaggacac cgcagtctat tactg 35

<210> 51
<211> 42
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 51
gtcctcagtt ttcaggctgt tcatttgcaa gtaggctgtg ct 42

<210> 52
<211> 30
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 52
ccaaggcacc actgtgacag tctcctcagg 30

<210> 53
<211> 30
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 53
cctgaggaga ctgtcacagt ggtgccttgg 30

<210> 54
<211> 24
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 54
ggtgtccact cccaggtcca gctg 24

<210> 55
<211> 29
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 55
cagctggacc tgggagtgga cacctgtgg 29

<210> 56
<211> 37
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 56
gcatgttgac cctgacgcaa gcttatgaat atgcaaa 37

<210> 57
<211> 36
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 57
gcgatagctg gactgaatgg atcctataaa tctctg 36

<210> 58
<211> 45
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 58
ccctctctct ttctccaggg gaacgcgcca ccttgacatg cagtg 45

<210> 59
<211> 36
<212> DNA
<213> artificial sequence

<220>
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<400> 59
cctggagaaa gagagagggt tgctggagac tgggtg 36

<210> 60
<211> 48
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 60
catgaactgg taccagcaga agcccggcaa agctcccaaa agatggat 48

<210> 61
<211> 38
<212> DNA
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<220>
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<400> 61
cgggcttctg ctggtaccag ttcatgtaac ttacactt 38

<210> 62
<211> 38
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 62
cttctgctgg taccagttca tgtaacttgc acttgagc 38

<210> 63
<211> 49
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 63
gggtctggga ccgattactc tctcacaatc aatagtctgg aagctgaag 49

<210> 64
<211> 47
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 64
gtaatcggtc ccagacccac tgccactgaa gcgagacggt actccag 47

<210> 65
<211> 38
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 65
ttcacgttcg gacaaggtac aaaggtggaa atcaaacg 38

<210> 66
<211> 38
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 66
ctttgtacct tgtccgaacg tgaatgggtt acttgacc 38

<210> 67
<211> 21
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 67
gcggatccag tcgacgaagc a 21

<210> 68
<211> 45
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 68
ctgaatggat ccaactgagg aagcaaagtt taaattctac tcacg 45

<210> 69
<211> 28
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 69
caaattgttc tcacccagtc tccagcaa 28

<210> 70
<211> 32
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 70
ttgctggaga ctgggtgaga acaatttggg ag 32

<210> 71
<211> 41
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 71
tggagactgg gtgagaacaa tttgggagtg gacacctgtg g 41

<210> 72
<211> 36
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 72
agagagggtt gctggagact gggtgagaac aatttg 36

<210> 73
<211> 37
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 73
gcatgttgac cctgacgcaa gcttatgaat atgcaaa 37

<210> 74
<211> 36
<212> DNA
<213> artificial sequence

<220>
<223> oligonucleotide

<400> 74
gcgatagctg gactgaatgg atccaactga ggaagc 36

<210> 75
<211> 122
<212> PRT
<213> artificial sequence

<220>
<223> de-immunized OKT3 VH

<400> 75

Val Ser Thr Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
1 5 10 15

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Ala
20 25 30

Thr Arg Tyr Thr Met His Trp Tyr Arg Gln Ala Pro Gly Gln Gly Leu
35 40 45

Glu Trp Ile Gly Tyr Ile Asn Pro Ser Arg Gly Tyr Thr Asn Tyr Ala
50 55 60

Gln Lys Phe Gln Gln Arg Val Thr Ile Thr Thr Asp Lys Ser Ser Ser
65 70 75 80

Thr Ala Tyr Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val
85 90 95

Tyr Tyr Cys Ala Arg Tyr Tyr Asp Asp His Tyr Cys Leu Asp Tyr Trp
100 105 110

Gly Gln Gly Thr Thr Val Thr Val Ser Gly
115 120

<210> 76
<211> 110
<212> PRT
<213> artificial sequence

<220>
<223> de-immunized OKT3 VK

<400> 76

Gly Val His Ser Gln Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser
1 5 10 15

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Leu Ser Pro Gly Glu Arg Ala Thr Leu Thr Cys Ser Ala Ser Ser Ser
            20                  25                  30

Ala Ser Tyr Met Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys
        35                  40                  45

Arg Trp Ile Tyr Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Ser Arg
    50                  55                  60

Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Asn Ser
65                  70                  75                  80

Leu Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp Ser Ser
                85                  90                  95

Asn Pro Phe Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
            100                 105                 110
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<210> 77
<211> 21
<212> DNA
<213> artificial sequence

<220>
<223> primer

<400> 77
ttgtgagcgg ataacaattt c 21

<210> 78
<211> 23
<212> DNA
<213> artificial sequence

<220>
<223> primer

<400> 78
gttttcccag tcacgacgtt gta 23

<210> 79
<211> 30
<212> DNA
<213> artificial sequence

<220>
<223> primer

<400> 79
cttgcagcct ccaccaaggg cccatccgtc 30

<210> 80
<211> 25
<212> DNA
<213> artificial sequence

<220>
<223> primer

<400> 80
cccttggtgg aggctgcaag agagg 25

<210> 81
<211> 33
<212> DNA
<213> artificial sequence

<220>
<223> primer

<400> 81
gagcctctcc ctgtctctgg gtaaatgagt gcc 33

<210> 82
<211> 35
<212> DNA
<213> artificial sequence

<220>
<223> primer

<400> 82
tcatttaccc agagacaggg agaggctctt ctgtg 35

<210> 83
<211> 35
<212> DNA
<213> artificial sequence

<220>
<223> primer

<400> 83
tacccgggga tccagatctg aattcctcat gtcac 35